

REMARKS

Claims 15-23 are now pending in this request for continued examination (RCE) application. Claims 1-14 have been canceled without prejudice or disclaimer. Claims 15-23 have been newly added to alternatively define Applicants' disclosed invention over the prior art of record, including Howell et al., U.S. Patent No. 6,047,772 and Hamada, U.S. Patent No. 5,960,128.

Previously, claims 1-6 and 8-14 have been rejected under 35 U.S.C. §102(a) as being anticipated by Howell et al., U.S. Patent No. 6,047,772 for reasons stated on pages 4-7 of the final Office Action. Likewise, claim 7 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Howell et al., U.S. Patent No. 6,047,772. As discussed, for purposes of expedition, claims 1-14 have been canceled without prejudice or disclaimer in favor of allowance of the newly added claims 15-23, including features that are not disclosed or suggested by either Howell '772 or Hamada '128.

For example, independent claim 15 defines an image processing apparatus as comprising:

- an imaging optical system for forming an image of an object on an imaging surface;
- a color imaging device including photo-detectors and color filters arranged on the image surface in two-dimensions, for performing photoelectric conversion of the image of the object formed by the imaging optical system;
- shift drive means for shifting the imaging optical system and the photo-detectors relative to each other; and
- a control unit for generating a synthesized image using image data of the image of the object obtained through color filters for a selected color of the color imaging device, and image data of an image of the object obtained through the color filters when the imaging optical system and the photo-detectors are shifted relative to each other by the shift drive means by a distance corresponding to a pixel on the imaging surface;
 - wherein the control unit controls the shift drive means for

shifting the image optical system the photo-detectors relative to each other by a distance corresponding to a predetermined pitch in a plurality of different directions to obtain a plurality of images, and generates a single monochromatic image using image data of obtained plurality of images and image data of the synthesized image.

Likewise, base claim 21 defines an image processing method comprising:

forming an image of an object on an imaging surface of a color imaging device by an imaging optical system;
extracting first image data of a selected color from the image of the object formed on the image surface;
shifting the imaging optical system and the color imaging device relative to each other by a distance corresponding to a pixel on the imaging surface;
extracting second image data of the selected color from an image of the object obtained after shifting is performed;
generating synthesized image data using the first and second image data;
shifting the imaging optical system and the color imaging device relative to each other by a distance corresponding to $1/n$ (n is an integer) of a pixel on the imaging surface in different directions a plurality of numbers of times to obtain a plurality of image data of the selected color; and
generating a monochromatic image by synthesizing the synthesized image data and the plurality of image data of the selected color.

As generally defined in newly added base claims 15 and 21, a single color image (for example, green) is extracted from the three color image and another image of the same color is extracted from an image obtained after the shifting operation is performed as shown in FIG. 1A, and a synthesized image shown in FIG. 1B is generated using obtained images. Thereafter, the shifting operation is performed to shift by a distance corresponding to $1/n$ of a pixel in different directions a plurality number of times as shown in FIG. 2A in order to obtain a plurality of images. Then, the synthesized image, shown in FIG. 1B, and the plurality of images are synthesized to generate a monochromatic image shown in FIG. 2B.

These features as defined in Applicants' base claims 15 and 21 are described from page 10, line 23 to page 11, line 10 and page 12, line 18 to page 13, line 2 of Applicants' specification. Applicants believe that neither Howell '772 nor Hamada '128 discloses or suggests these features and, as a result, believe that claims 15-23 as now pending in this RCE application are in condition for allowance.

In view of the foregoing amendments, arguments and remarks, all claims 15-23 are deemed to be allowable and this application is believed to be in condition to be passed to issue. Should any questions remain unresolved, the Examiner is requested to telephone Applicants' attorney at the Washington DC area office at (703) 312-6600.

INTERVIEW:

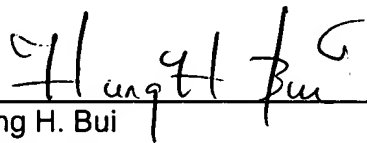
In the interest of expediting prosecution of the present application, Applicants respectfully request that an Examiner interview be scheduled and conducted. In accordance with such interview request, Applicants respectfully request that the Examiner, after review of the present Amendment, contact the undersigned local Washington, D.C. area attorney at the local Washington, D.C. telephone number (703) 312-6600 for scheduling an Examiner interview, or alternatively, refrain from issuing a further action in the above-identified application as the undersigned attorneys will be telephoning the Examiner shortly after the filing date of this Amendment in order to schedule an Examiner interview. Applicants thank the Examiner in advance for such considerations. In the event that this Amendment, in and of itself, is sufficient to place the application in condition for allowance, no Examiner interview may be necessary.

To the extent necessary, Applicants petition for an extension of time under 37

CFR §1,136. Applicants have submitted fees for the claims added by this Amendment. Please charge any shortage of fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, No. 01-2135 (Application No. 500.40886X00), and please credit any excess fees to said deposit account.

Respectfully submitted,

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HHB
Date: **April 16, 2003**
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